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The *Journal of the Travellers' Aid Society* is Game Designers' Workshop's registered trademark for its science fiction gaming magazine devoted to **Traveller.**

Traveller is Game Designers' Workshop's registered trademark for its role-playing game of science fiction adventure set in the far future.

Dates in this issue of the *Journal* are given in accordance to an arbitrary Imperial calendar of 365 days. The date consists of a three-digit day number (the current day of the year) a dash, and a four digit number (showing the current year since the founding of the Imperium).

The date of this issue is **195-1109,** or the 195th day of the 1109th year of the Imperium.

The *Journal of the Travellers' Aid Society* is a science fiction magazine devoted to **Traveller,** GDW's role-playing game set in the far future.

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WINNER — H. G. WELLS AWARD: BEST MAGAZINE COVERING ROLE-PLAYING, 1981

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Advertisers should inquire for an advertising rate card.

Submissions: We welcome articles and illustrations for the **Journal.** Please inquire before submitting manuscripts, enclosing a stamped, self-addressed envelope; we will send manuscript guideline and format sheets.

From the Management

An open letter to the gaming industry:

Dear Folks,

It is becoming increasingly irritating to me to see my name almost constantly misspelled in the gaming literature. This has been happening with increasing frequency in the last year or so, and I believe it is due to the increasing prominence of another gentleman in the industry who has a name very similar to mine. Many individuals are operating under the mistaken notion that our names are spelled the same. Some believe us to be related, and one or two misguided souls believe us to be the same person.

Pay attention: Loren Wiseman (that's L-O-R-E-N W-I-S-E-M-A-N) is with GDW. Jordan Wiesman is with FASA. We are not the same person. We are not (so far as we know) related. We are both sensitive about the spelling of our names.

I would count it as a personal favor if everyone in the gaming literature who mentions either of us would take the trouble to spell our names properly.

Yours sincerely,
Loren K. Wiseman

On to other business. The convention season is here again. By the time most of you read this, it will be the end of July, and I will be back from attending Origins '83. We will have mailed issue number 17 in mid-July, and will be back on schedule. I was forced to make a number of sacrifices, however, to pull this feat off, the most painful of which is the cancellation of this issue's two *Amber Zones* and the *Casual Encounter.*

I hope the inclusion of the second in our series of Special Supplements, *Exotic Atmospheres.* will partially make up for the missing *Casual Encounter* and the *Amber Zones. They will return.*

We are introducing a new column this issue, called *Random Notes.* Written by John Harshman and others of the Workshop staff, this column will consist of short essays on various aspects of life in the official GDW **Traveller** universe. Some of these will be items we left out of *Library Data* for various reasons, and others will be things we come up with from time to time while working on something else. Many **Traveller** referees run adventures and campaigns set in one of the official subsectors, and there is a constant demand for information about our universe. We hope that *Random Notes* will fill this demand.

For some time now, we have been receiving requests to organize some form of **Traveller** player's group. We have finally decided to do so. Although we have not worked out all the details, we will begin registering **Traveller** clubs this summer. We will make this register available to each club, and to anyone else that asks, to promote nation-wide communication between **Traveller** players. A player moving to a new region

will be able to consult the register and find the nearest **Traveller** group in the area. Clubs in the same region will be able to contact each other, exchange ideas, and be the better for it.

In addition, to help clubs attract new members, we will make special merchandise available only through registered clubs.

To qualify as a **Traveller** club, your group must 1) have four or more members, 2) meet fairly regularly to play **Traveller** or related games such as *Azhanti High Lightning* or *Invasion Earth* (although these need not be the only games the club plays), and 3) have one member appointed to act as a contact.

The member appointed to act as a contact will be the one who receives any material GDW sends out, and whose address will be listed in the register. Only the appointed contact will be able to order any special merchandise GDW makes available. Some of this special merchandise may eventually be made available to the general public, but initially, it may only be obtained through a registered club.

To register your **Traveller** club, send us a letter listing name of the club (if any), the name and address of the club's official contact person, and the number of people who are members.

In order to kick off the registration, each club registered before August 15, 1983, will receive a free map of the Imperium for each member.

Special deals down the pike may include such things as **Traveller** hats, keychains, club ID cards, posters, and (of course) **Traveller** T-shirts.

Naturally, we intend to do other things besides sell you **Traveller** paraphernalia. Many clubs run **Traveller** events at the numerous local gaming conventions (and, increasingly, at Science Fiction conventions as well). We will be issuing a set of guidelines for such events. Among other things, these guidelines will spell out what a club must do to gain official sanction (and prizes) for these events. Because of the short time between issues 16 and 17, the results of issue 16's feedback will be presented next time, to allow time for all forms to be returned.

The additional feedback questions for this issue are:

First, would you be interested in a rules question and answer column. The questions would come from the readership as a whole, and from questions we commonly encounter at the convention seminars. Would you like us to deal with background questions on the GDW universe, or to limit ourselves solely to rules questions?

Second, what other features would you be interested in seeing printed in the *Journal?* One possibility is a game and magazine review column (over and above the brief notes in *Just Detected).*

All players are urged to answer these questions, either using the feedback form printed on the mailing wrapper, or on a separate sheet of paper.

Traveller is available overseas through GDW distributors in the UK and Australia. We recommend that our subscribers in these countries obtain copies through their respective distributors.

United Kingdom: Traveller (and its additional booklets, adventures and supplements) is printed under license from GDW by Games Workshop, 27-29 Sunbeam R, Park Royal, London NW10. GW import the *Journal* and other GDW products.

Australia: Traveller products are imported and distributed by Jedko Games, 18 Fonceca St, Mordialloc, Vic.

TRAVELLER NEWS SERVICE

RHYLANOR/RHYLANOR (0306 A434934-F) **Date: 128-1109**

¶ Dispatches received from Regina indicate that a major Imperial raid against Zhodani military and industrial installations at Ninjar (Chronor 0608) has been accomplished by means of secret caches at the old Imperial naval base in the Quar system (Chronor 0808).

¶ No further details are available at this time. Ω

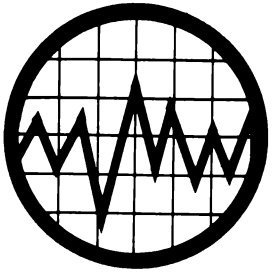
BECK'S WORLD/REGINA (0604 D883349-D) **Date: 122-1109**

¶ The last remnants of the Vargr battle fleet from Yorbund were run down and destroyed in the Beck's World system today. Although all enemy forces are not yet accounted for, Vice-Admiral Elphinstone's staff was optimistic that the threat from the Vargr forces has been countered. Ω

FLASH FLASH FLASH FLASH FLASH FLASH FLASH FLASH FLASH
REGINA/REGINA (0310 A788899-A) **Date: 132-1109**

¶ In a terse communique, his Grace the Duke of Regina today announced that Admiral Lord Santanocheev has been relieved of command effective immediately. Acting with the authority of an Imperial warrant, the Duke has taken personal command of the 1st Provisional Fleet.

¶ Members of the Duke's staff declined to comment other than to confirm that the change of command has taken place. Nothing is known as to the reasons for Santanocheev's relief, or his present whereabouts. Ω



JUST DETECTED

Conventions

Nancon 88-VI

July 29-31, Houston, Texas. RPGs, boardgames, miniatures, dealer area. Contact Nan's Game Headquarters, 118 Briar Grove Center/6100 Westheimer, Houston, TX, 77057.

Arcanacon

September 1-4, Parkville, Victoria, Australia. Science fiction and fantasy role playing, Diplomacy, a **Traveller** tournament, video and computer games. Contact MUDDA, Box 104, Union Basement, Melbourne University, Parkville, Victoria 3052 Australia.

Games

Alien Armada

A Centurian game of plucky humans versus invading alien fleets and their hordes of clone soldiers in a strategic level struggle.

One full color 22" x 34" map, 300 counters, charts, and a 12-page rulebook.

Design: Michael E. Crane, Jr.

Publisher: Centurian Games are published by the Jersey Devil Game Company, Northfield, NJ 08225.

Knight Hawks

The starship construction and ship-to-ship combat module for TSR's Star Frontiers game.

One 64-page 8½" x 11" campaign book, one 16-page Tactical operations manual, one 8½" x 22" frontier deployment chart, one 16-page 8½" x 11" scenario booklet, 285 counters, one 35" x 22" map, two dice and a crayon, boxed.

Design: Douglas Niles

Publisher: TSR Hobbies, Inc. PO Box 756, Lake Geneva, WI 53147.

Play Aids

Lee's Guide to Interstellar Adventure

Full planetary specifications and plot outlines for 10 worlds, each keyed to specific worlds in both the *Spinward Marches* and *Solomani Rim* sectors, for use with either.

One 48 page, 5" x 8½" booklet.

Design: Gregory P. Lee

Publisher: Gamelords, Ltd, 18616 Grossbeak Terrace, Gaithersburg, Md, 20879.

The Undersea Environment

Supplementary rules dealing with underwater situations, along with descriptions of the necessary equipment and the various hazards likely to be encountered.

One 48 page, 5" x 8½" booklet.

Design: J. Andrew Keith

Publisher: Gamelords, Ltd, 18616 Grossbeak Terrace, Gaithersburg, MD, 20879.

Magazines

Different Worlds

Issue 29, June 1983, contains Sir J. Harshman's rebuttal to Paul M. Crabaugh's Battleriders vs Battleships articles of issue number 26.

Single issues are $3. Subscriptions are $22 for nine issues.

Publisher: Chaosium, Inc., PO Box 6302, Albany, CA 94706.

The Bestiary

Ice Crawler

(Palarthropodia gelidus)

When researchers first encountered the ice crawler on the frozen plains of Furioso (Alderamin 0707), they were at first unsure whether they had discovered a new and extremely alien form of life or an incredibly sophisticated example of some unknown alien technology. The ice crawler is in fact a life form, but one unlike the typical life forms encountered on orthodox worlds.

Furioso is a giant, frozen world with an insidious atmosphere consisting largely of hydrogen, but with significant amounts of methane and ammonia present as well. Life in this strange environment is bizarre by human standards, and the ice crawler is a good example of Furioso's unique biology.

Ice crawlers have flat, low-slung bodies, reminiscent of a Terrestrial caterpillar in shape, measuring some three meters in length and suspended between five pairs of jointed, exoskeletal legs. An eleventh "leg" extends behind the creature; each leg ends in a polydactyl foot padded with microscopic grippers which insure firm footing on any surface — even glass-smooth ice.

Four modified legs ring the creature's anterior end (there is no head as such) and act as shovels, scrapers, and rock lifters, throwing rocks into a ventral "hopper" ringed by muscular rock crushing "teeth". The creatures are sheathed in a glittering, steel-hard exoskeletal armor; this gives them the almost artificial appearance which so confused the first observers. However, spongy organs are present all along each side of the creature, just above the leg-body joints. These organs, ranging in color from brown to dull orange to bright red, are the analogues to lungs for the ice crawler, which "breathes" hydrogen. No muscular action is involved in this process; hydrogen is diffused through the spongy tissue, and sequestered and collected chemically within the creature's body.

The ice crawler metabolizes rock. They have a dual poly-chain silicon-carbon biochemistry, using silicon in some biochemical reactions and carbon in others. Carbon comes from the

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breakdown of the methane present in the atmosphere, while silicon is liberated by heating and reduction reactions from ingested rock. In this environment, the silicon breakdown process is very dangerous, for when silicon is broken from rock, it liberates oxygen, which is poisonous to the ice crawler and produces a potentially flammable mixture in a hydrogen atmosphere. For the most part, ice crawlers immediately combine this liberated oxygen with atmospheric hydrogen in special organic reaction chambers within the body. The exothermic reaction, though apparently not essential to their body chemistries, acts as a sort of organic "supercharger." As the animal is, at best, sluggish and slow-moving, this process brings about unexpected results. This reaction serves as a chemical "pick-me-up" (as one observer put it) which can send the usually torpid animal thundering across the ice in random directions at unexpectedly great speeds. Over the ages, however, some species developed an even more unique method of using oxygen liberated during the breakdown of silicon from ingested rock. These creatures can store oxygen in nearly pure form. When threatened or frightened, they can direct jets of oxygen and hydrogen through an anterior orifice located between their handling legs. This stream of hydrogen and oxygen is ignited catalytically, turning the beast into a living flamethrower with a range of several meters. The effect has been reported to cause serious damage to the protective suits of scientists studying the animals.

This most interesting defense mechanism was developed as a protection against another of Furioso's lifeforms, the meter-long predatory carnivores known popularly as ice spiders. These vicious pack-hunting carnivores are virtually identical in external appearance and in body chemistry, but metabolize other life forms, rather than rocks, for supplies of carbon, oxygen, and silicon.

Both creatures will ingest humans (and anything else slow enough to get in their way) and are considered quite hazardous. At this time, nothing is known of their life cycles, since researchers cannot study them for prolonged periods of time in Furioso's insidious atmosphere. There have been growing speculations, however, that the ice spider may actually possess a form of rudimentary intelligence, a possibility which has intrigued many xenosophontological investigators in recent years (and inspired several expeditions to the icy wastes of Furioso).

— *J. Andrew Keith*

Animal	*Weight*	*Hits*	*Armor*	*Wounds & Weapons*	
Ice Crawler	800kg	28/6	Mesh	12 see text	F4 A6 S1
Ice Spider	100kg	17/6	Mesh	10 Claws	A0 F8 S3

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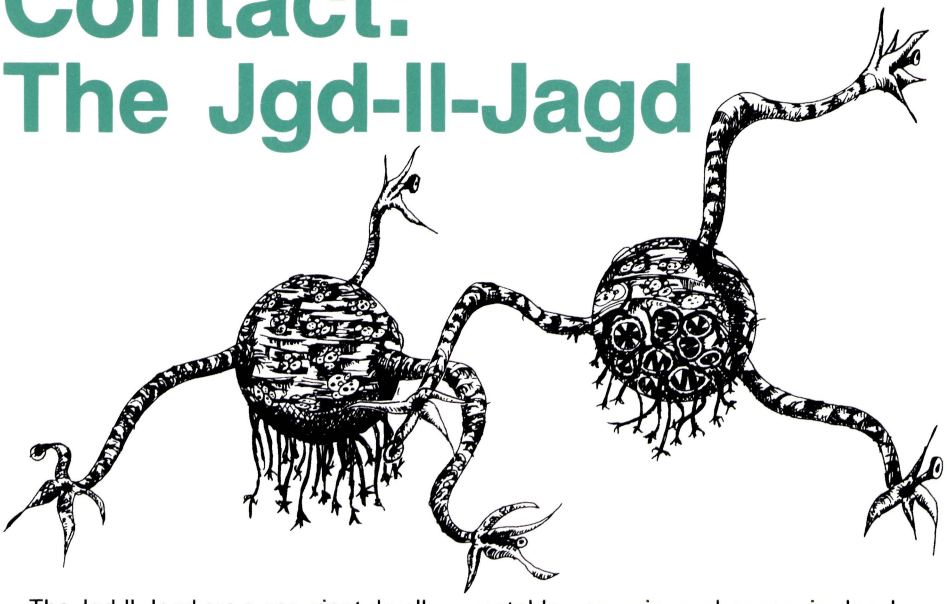
KLINGON CHARACTER SUPPLEMENT

Contact: The Jgd-ll-Jagd



The Jgd-ll-Jagd are a gas-giant dwelling intelligent species originating on a world on the coreward edge of the Imperium. Although technically a minor race, they possessed very advanced technology even before they were first contacted by Vilani explorers in about −4200; in the period since, for obscure reasons, they have never employed jump drives, although their slower-than-light ships have ventured several parsecs from Jagd, and Jgdi colonies are spread across three subsectors. Jgd have very occasionally travelled further afield than this in heavy life support units carried by bulk transporters, and Jgd travellers have even collaborated with humaniti in exploration and exploitation problems. The Jgd are the most advanced gas-giant dwellers in the Imperium.

BIOLOGY

Jagd is a gas-giant, slightly smaller than Sol's Saturn (110,000 km diameter); its surface is covered by ammonia "seas" which are usually not far below their boiling point; conditions at sea level are, therefore, somewhat unstable, as minor changes in local weather conditions can lead to spectacular evaporation and precipitation effects. Life evolved in the depths of these oceans (probably when the planet was slightly cooler for some reason), but evolutionary progress beyond simple multicellular organisms only occurred when various forms adapted to life in the upper atmosphere. The most advanced of these subsequently "moved down" again to use the crystalline "icebergs" that proliferate on the Jagdish oceans for cover and resting-places; the sentient Jgd evolved in this environment, although the exact means by which their intellect evolved is still in dispute.

The Jgd have roughly spherical bodies, about 3m in diameter, dotted with clusters of sensory cells, and with three long manipulative tendrils distributed regularly round the "equator". The densest mass of sensory organs, plus a large number of manipulative "feelers" and feeding structures, are sited on the lowest point of the body. The species' internal structures are based on a number of thin-

walled compartments, one of which (near the body center) houses the brain (or at least the largest neural nexus), but most of which are empty but for gases secreted by the body chemistry. Control of secretion rates and partially-directed release of the gases (mostly hydrogen) give the Jgd considerable control over their atmospheric buoyancy and direction of flight, but these "living balloons" are still rather susceptible to atmospheric currents; it is generally believed that accidental population redistributions were common in primitive Jgdi society, leading to loosely-bonded communal organization and exceptional homogeneity in Jgdi culture.

In so far as such terms have meaning in this context, the Jgd seem to spring from omnivore/intermittent stock. There is only one sex; genetic interchange is achieved by air-borne spores, and reproduction is achieved by a sophisticated form of binary fission. Senses are based on extreme awareness of atmospheric vibration, plus very limited response to a very wide range of electromagnetic waves. Jgd can communicate limited information over long (20km+) distances, using pitch-modulated ultrasonic "whistling", but the primary form of "speech" involves electrical impulses transmitted by direct physical contact. It is thought that this allows the transfer of very large quantities of information at the semi-subconscious as well as the conscious level, further enhancing the homogeneity of Jgd culture.

The Jgd live extremely long lives; apparently, no condition of "old age" exists, although eventually a fissioning Jgd undergoes division of the parent brain, rather than generating a new "child" cerebrum. Average life of an identifiable Jgd individual, barring accident, is approximately 630 plus standard Imperial years.

SOCIETY

The Jgd developed a mechanistic civilization when they learned to manipulate crystalline matter from the Jagd "icebergs"; thus crystallography is as central to their technological history as metallurgy is to mankind's. They developed activities akin to farming rather late, but their social systems are immensely refined, and spring from the need to organize for food-gathering and hunting. The basic social unit is termed the "hunt" by human sociologists, and consists of a cooperative body formed for a specific purpose — not always anything as short-lived as a hunt for food. Many "hunts" are millennia old, but even disregarding natural mortality, the membership is extremely flexible, with individuals leaving and joining quite frequently in most cases. Hunts to some extent resemble human businesses, trusts, or colleges, or Hiver nests, but each hunt actually holds a rather deeper role in Jgdi culture than this implies, in a way that only the Jgd themselves really comprehend. The crew of a short-range spaceship will usually comprise one hunt, while an interstellar craft will have three or four 'active' hunts aboard, plus the social nucleus of several more that become active as and when the ship establishes a colony or base on a new world. The system is remarkably flexible but robust.

The other key element in Jgdi psychology is an obsession with balanced exchanges, apparently running at least as deep as human curiosity, Aslan land-hunger, or Newt orderliness. A Jgd is literally incapable of "unilateral behavior". For example, the Jgd never initiate exploration for its own sake, but only send ships where there is a very high probability of finding exploitable resources, or of establishing a colony that might eventually send vessels back to Jagd. This obsession, apparently

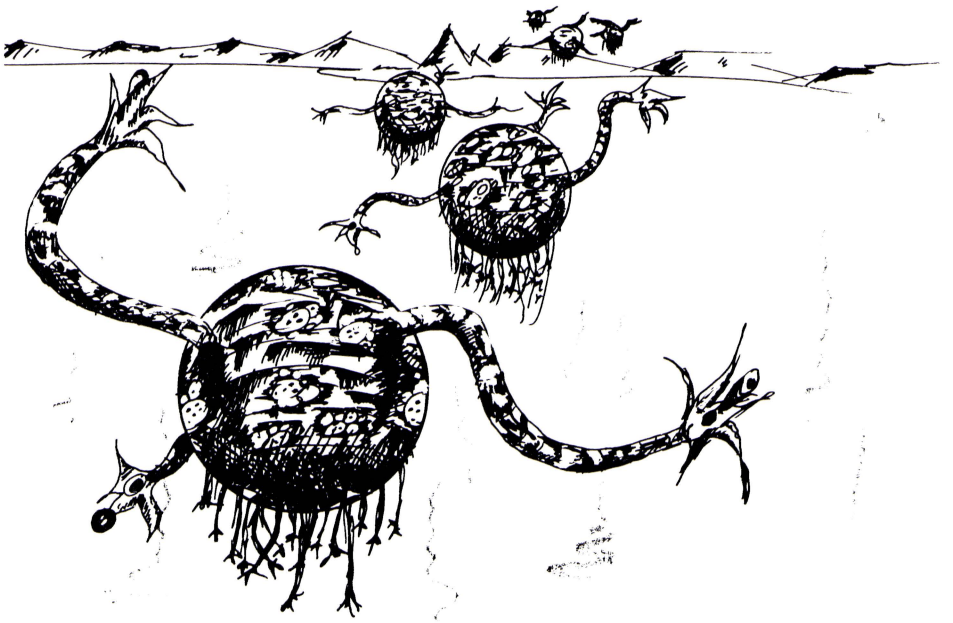
linked to the inherently bilateral nature of Jgdi conversation, has resulted in almost all contact between Jgd and other races taking the form of trade. It also causes the Jgd to operate a peculiar (and slightly brutal-seeming) legal system; theft is always punished by fines, violence by violence, and so on (in short, "an eye for an eye"). It is even hypothesized that the Jgd commenced interstellar travel when and only when they were first contacted by humaniti because only then was a degree of symmetry implied by the activity.

The homogeneity of Jgdi culture is a major factor in Jgd society, but it must not be overstated. Jgd are discrete and independent individuals, with distinct personalities and powerful personal drives; they have an idea of private property; they have personal violence, if not wars. Nonetheless, it is important to note that education — in the sense of a transmittal of data — is extremely easy for them; hence almost any Jgd can employ almost any Jgdi device or technique with at least minimal competence. This does not imply that the race lacks individuals specializing in particular fields of competence, merely that total incompetence in any field is rare.

JGD IN INTERSTELLAR SOCIETY

Jgdi thought is alien to all other races' intelligence; hence communication is a persistent problem. The obvious difficulty of simply conversing is generally solved by use of powerful human or Jgdi computer translators, but even these tend to struggle with many concepts; nor is pronunciation of synthesized phonemes always easy (the race name is a human corruption of something produced by an early Jgdi machine). In general, relations with humaniti and other races are restricted to trade and informational exchanges.

The Imperium classifies the Jgd as a friendly associate species with autonomous government; actually, no formal pacts exist, although relations are in a state of stable equilibrium. Jgd-inhabited systems will always be "patrolled" by a number of large and



powerful vessels (see below); these rarely take much interest in human affairs unless Jgdi interests are threatened. The chief point to note in such systems is that fuel-skimming a Jgd world is extremely unwise; shock waves from the pass will cause severe damage to the beings and their environment, and their response is certain to involve high-energy weapons fire. For this reason, Jgd systems are well-marked with navigational beacons.

Other races get on with the Jgd even less well than does humaniti (although there are Jgd colonies in the Centaur empire); mankind at least has long experience with the race, and the Jgdi exchange-obsession corresponds effectively to the human tradition of mercantile economics. There are no records of the Jgd hiring alien mercenaries for any but short-term jobs, or of small Jgd groups or individuals settling for long with other races save out of necessity.

The Jgd failure to construct jump drives is a mystery (the task could easily be performed by Jgd technology). One theory is that the race actually refuses to do so because it is impossible to enter into an exchange relationship with hyperspace, making the subject anathema to them. More plausible theories hold that jump travel is dangerous to them. Certainly, the Jgd travel units occasionally loaded onto human jump ships carry extremely heavy insulation.

JGD CHARACTERS

Jgd can be treated as "animals" for combat purposes, although they have considerable intelligence. Mature Jgd have 5D hit points "to unconsciousness" and a further 4D "to kill",, intelligence about 2D+2, and education around 1D+7. Jgd social status (if any) is incomprehensible to humans.

Jgdi encountered on worlds where they can live unprotected (where ammonia is a liquid and radiation levels are within a certain spectrum — about 5% of gas giants) or with minimal protection (another 15%) will generally have only their natural "armor" — tough hides equal to jack. In other cases, Jgd will use small sealed-environment capsules with heavy heat shielding and structures comparable to armor (of *Striker* value about 40-40), each holding 3-10 Jgd, or less often (1D roll of 6), they will wear personal protection equal to battle dress (and rather cumbersome). "Unarmored" Jgd can use their three main tentacles as human fists; those in personal armor have control of three "work arms" that act as cudgels. If armed Jgd appear — which happens only rarely, and usually for a good reason — devices carried will resemble human plasma or fusion guns, with a few lasers and gauss gun type designs.

Jgd in their natural environment "fly" at speed 3; their life support vehicles can be compared with ATVs, while their personal protective suits give a "walking" move of 2.

Jgdi skills are generally specific to Jgd technology and society; the main points to note here are that all members of the race have at least basic knowledge of most Jgdi devices, while specialist Jgd tend to be very well-trained; ships and weapons are usually handled at skill 3+. Beyond this, the referee should assign whatever skills seem appropriate. (Note: Jgd have homogeneous social structures, and so have no equivalent of streetwise skill, and only a very strange analogue of administration.)

REFEREEING JGD

Jgd are utterly alien beings, and may be quite tricky to referee. (Jgd player characters are out of the question). The main problem is their obsession with

balanced exchange in all relationships, although practical environmental factors must also always be borne in mind. Nonetheless, the race is neither irrational nor erratic, and basic impulses such as self-preservation are common to men and Jgd alike.

Jgdi ships can be designed using *High Guard,* with the following variations. Basic tech level is 12, but power plants and maneuver drives are tech 15; no jump drives are fitted. All hulls are close structures with factor 6 or 7 armor. Craft for in-system use range between 2,000 and 11,000 tons; interstellar designs are between 60,000 and 400,000 tons in most cases. Weapons are generally bay-mounted fusion guns (tech 15 quality), repulsors, nuclear dampers, and some meson screens (all tech-14); missiles and sandcasters are rare, and limited to tech-7 effectiveness. Only interstellar craft have spinal mounts (tech-14 meson guns or PAWs). Each Jgd requires ten tons of life support and living quarters (in place of staterooms); no equivalent of low berths exist for Jgd. The "carrying capsules" in which Jgd occasionally make interstellar trips can be designed using the same system — may even have auxiliary maneuver drives — but 20% of mass is always committed to special insulation, with energy requirements such that power plant-4 or better is standard (75% of output feeds the shielding in jump space).

Characters may encounter Jgd in a variety of circumstances. Trade is an obvious possibility; Jgd understand the concept of money, but prefer barter-type systems, and the more symmetrical the exchange the better; a party seeking low-temperature crystals will probably achieve the most return if they trade with industrial diamonds or refined titanium. Partnerships in exploration are possible, but harder to negotiate.

Jgd never, ever voluntarily travel by jump ship except in insulated capsules; if asked why not, they will be evasive, and what they do say will defeat any translator. One kidnapped into such a trip will go into a mysterious state of neural shock the instant jump space is entered, rapidly deteriorating into death (few hospitals have personnel with the proper expertise or properly heat-insulated equipment to perform delicate medical work on a Jgd); bear in mind that Jgdi "vengeance" will subsequently be certain and thorough. On the other hand, Jgd slower-than-light ships, taking Jgd lifetimes to cross the interstellar void, are strange and interesting encounters for players' ships. Jgd colonies and outposts should be noted as precluding hasty fuel scavenging.

Finally, note that human social skills are of little use when dealing with Jgd, although liaison 4+ can provide some benefit, and characters with computer 2+ may study computerized translators in action, and over an extended period of time may seek to upgrade their software and so improve communications.

— *Phil Masters*

685-3880 THE COMPLEAT STRATEGIST *685-3881*

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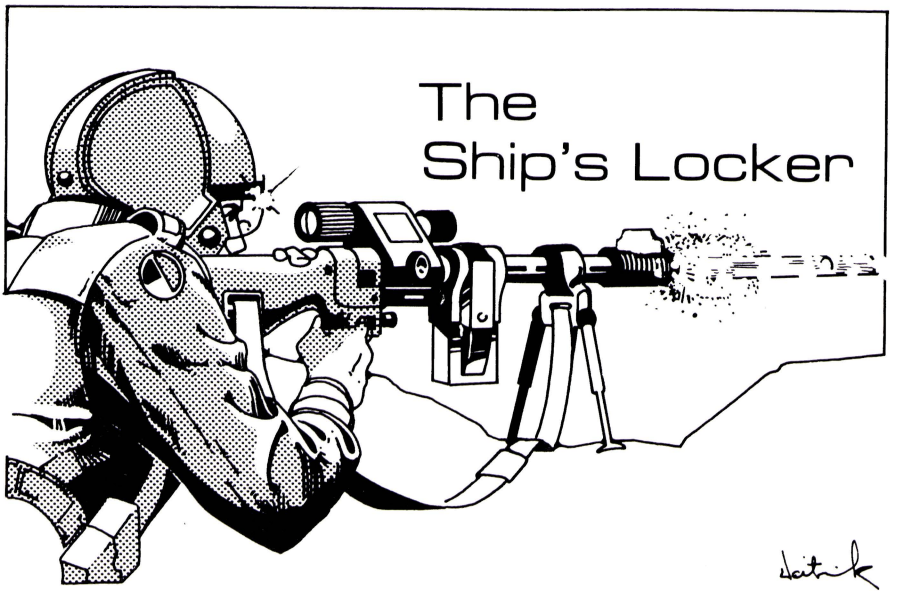

ASSAULT ROCKET LAUNCHER

Despite its name, the assault rocket launcher (predictably abbreviated as ARL) is not a piece of field artillery but a radical development of the chemically-propelled slug thrower. Introduced at tech level 10, the ARL is an alternative to the ACR as the standard non-energy infantry small arm. It is used from TL 10 to TL 13, where it is finally superceded by the gauss rifle.

The ARL is related to, but not based on, the TL 10 ACR and the TL 9 accelerator rifle. As is the case with the accelerator rifle, the barrel is merely a launch tube for the ammunition. Its general appearance is similar to the ACR, its electronic battlesight is identical, and, like the ACR, the ARL is gyrostabilized when the trigger is pulled. However, it differs from these weapons in one important way: its ammunition.

The assault rocket launcher fires 10mm solid-fuel rocket slugs. Each slug has four pinhole-sized nozzles angled to imitate rifling and "burns" for 5 meters before momentum takes over. Since the slugs are simply alloy cases with warheads, the payload and final velocity may be varied. Ammunition types commonly available include: HEAP (shaped-charge; each round weighs 18 grams), HE (15 g), KEAP (plastic-lubricated solid rounds; 20 g), normal solid rounds (20 g), squash-head ("dum-dum"; 20 g), tracers (20 g), and gas rounds (15 g each), Of these, all but the gas rounds have a final velocity of 800 meters per second (300 m/s for the gas round) and all but the HEAP are "rifled". Ammunition is held in 20-round magazines inserted into the underside of the weapon behind the pistol grip. "Banana" magazines holding 40 rounds are also available for squad-support use. Reloading takes one combat round, during which the firer is treated as evading.

The use of rocket slugs provides many advantages. For example, no cartridge-ejection system is needed so the weapon can be sealed from dirt (except for that deposited by the slug's exhaust). The action and barrel do not have to withstand high pressures; in fact, the barrel is slot-

ARL Weapon Characteristics

Range DMs	*Close*	*Short*	*Medium*	*Long*	*Very long*
HEAP	−8/−8	−4/−4	−1/+1	−2/−1	−5/−4
HE	none	−4/*	0/+2	−1/+1	−3/−2
KEAP	−8/−8	−4/−4	+2/+4	+1/+2	−2/0
Gas	−8/−8	−4/−4	−2/0	−8/−6	none

Armor DMs	nothing	jack	mesh	cloth	reflec	ablat	battle
HEAP	+2/+4	+2/+4	+2/+4	+1/+3	+3/+5	+2/+4	0/+1
HE	+3/+5	+3/+5	+1/+3	−2/0	+3/+5	+2/+4	−3/−2
KEAP	+2/+4	+2/+4	−1/+2	−3/−1	+2/+4	0/+2	−5/−4
Gas	+1/+3	+1/+3	+1/+3	+1/+3	+1/+3	−6/−5	

	Damage
HEAP	5D
HE	4D
KEAP	3D
Gas	2D†

Notes: none = no fire allowed at this range. * No auto fire allowed at this range. † Gas rounds inflict this damage once per round for two combat rounds; such damage wears off after one hour. Adjacent targets are attacked as if by an HE round (see Book 4, *Mercenary,* page 32.)

ted to allow exhaust gasses to escape. Because the exhausts are vented out, the weapon is fairly quiet (but not as quiet as a silenced conventional weapon). Lastly, the ARL qualifies as a low-recoil (zero-G) weapon. Its chief disadvantage is its high signature (the cloud of exhaust gases released with each shot, especially during fully automatic fire).

The ARL can be fired in automatic and semi-automatic modes, each automatic burst consisting of four rounds. The setting may be changed at the end of each combat round. Sustained autofire (over 8 consecutive combat rounds) may only be performed with the squad-support version of the ARL.

Base weight of the ARL is 3000 grams, with 20-round magazines weighing 500 grams and 40-round magazines weighing 1000 grams. Overall length is 750mm. The base price for the basic weapon system is Cr800, which includes an electronic battlesight and a carrying sling. Magazine prices are: KEAP/HEAP, Cr35; HE, flare, and gas, Cr30; squash-head, Cr25; and solid, Cr20. Double these prices to find the cost of a 40-round magazine of the appropriate type. A kit to convert a standard ARL into the squad-support version costs Cr200 and includes a heavy-duty barrel and action. Conversion adds 500 grams to the base weight.

Combat Rifleman and Zero-G Weapons skills (*Mercenary,* page 12) may be used as positive DMs on the "to hit" roll. The dexterity DMs are DM−2 if dexterity 6− and DM+2 if dexterity 9+. Extreme range for the ARL is 1000 meters.

IMAGE CONVERTER

Most night-vision devices and electronic sights are either sensitive to infrared (heat) radiation or use light intensifiers to detect their targets. Both have minor disadvantages: IR images can be camouflaged by insulation and LI requires background light to amplify. In addition, the user can only see as far as the unaided eye.

Commercially available at tech level 10, the image converter is sensitive to both infrared and visible light. To use the technical terms, it uses a curved-channel electrostatically-focussed microchannel light intensifier to pick up both heat images (the "thermal imaging" described in *Striker)* and visible-light pictures. The converter can intensify these images, making night-vision possible, as well as magnify them up to 20X. Both functions are completely adjustable, although high intensification will cut gain (contrast) drastically, making the resulting images very unclear. Automatic polarizers cut in if the image is bright enough to blind. A laser rangefinder is also included.

In game terms, the image converter may be described as a combination of binoculars and LI and RI goggles. In infrared mode, personnel may be detected up to 3km away and vehicles at 6km. In visible-light mode, personnel may be detected at 5km and vehicles at 10km. *Striker* rule 47 may be used to determine the effectiveness of the sensors; in **Traveller**, roll 4+ to detect a target in concealment, DM+2 if it is a vehicle, DM−4 if searching with IR only and the target is heat-shielded, and DM−2 for each 100 meters or fraction thereof, with detection automatic if the target is in the open and impossible if the target is behind a solid object such as a wall. Other DMs should be applied as required. Note that physical concealment does not necessarily mean that a target is undetectable. The rangefinder is effective out to 7 km, making it useful for infantry or hunting use only.

Special hardware/software packages are available for hand computers that expand the capabilities of the image converter. When hooked up to a computer using a graphics package, the image converter can be tied into a map box (allowing others to see what the user sees), and electronic "photographs" can be stored in the computer's memory. Another package allows the computer to calculate the speed of a target relative to the user.

Physically, the image converter is similar to a set of binoculars. Base weight is 750 grams, with powerpacks weighing 500 grams. Base price is Cr10,000, which includes the basic system and a carrying strap, while powerpacks cost Cr2000. Powerpacks are mounted inside the converter casing and average one week of constant use. The graphics hand computer package costs Cr200 and weighs 250 grams, and the laser/Doppler package costs Cr400 and weighs 400 grams.

— *Paul Aoki*

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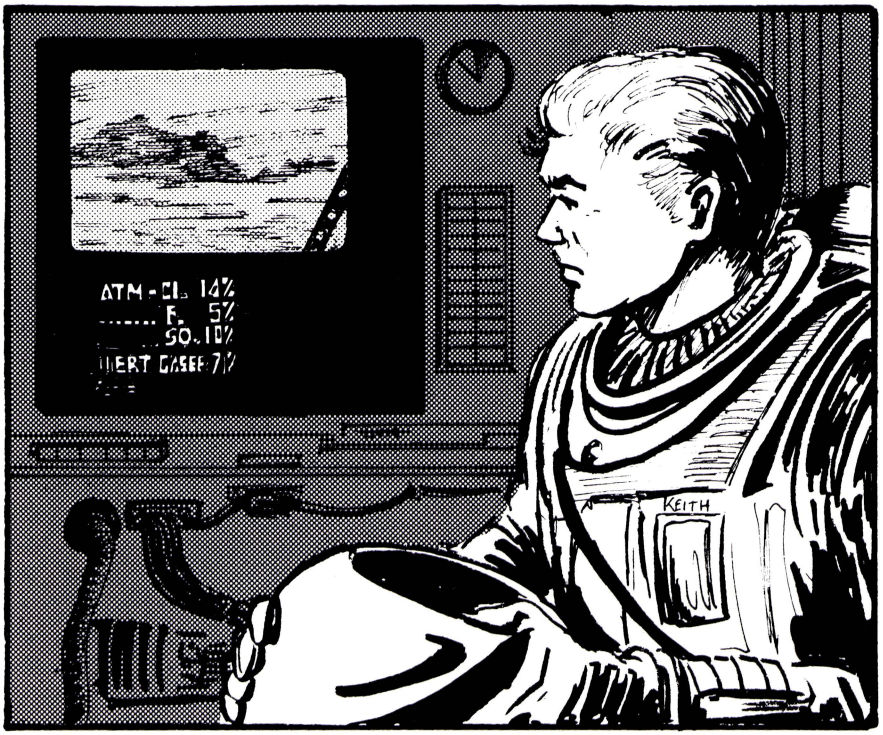
Special Supplement 2
Exotic Atmospheres

TRAVELLER®

Science-Fiction Adventure in the Far Future

Game Designers' Workshop



This Special Supplement for **Traveller**, *Exotic Atmospheres,* is a brief overview of the various types of atmospheres found on alien worlds which have been classified as exotic, corrosive, or insidious. Where the basic rules for **Traveller** issue a blanket statement to generally cover each type of atmosphere, this examination will discuss some specific atmospheric compositions, the special hazards they pose, and the picture they give us of the worlds on which each is found.

Referees are encouraged to use this information to paint a more vivid image of the sort of environment in which **Traveller** characters are adventuring. The term insidious atmosphere is quite sufficient in game terms, but it is far more descriptive if the referee reports that the players are about to debark on a hydrogen-atmosphere world where subtle hydrogen seepage could cause a dangerously explosive air mix inside a character's vacc suit, which could be ignited by a spark from the suit's electrical system. With the introduction of this type of detail, there is much more room for the development of interesting problems, and far more science fiction flavor to the resulting game.

ATMOSPHERES

Few worlds will be found where a single chemical makes up the entire atmosphere. Most atmospheres have a complex gas mix which will include a variety of specific elements, some in great amounts, others barely detectable. Atmospheric mixes include active and inert gases. On Earth, oxygen (O_2) is active, but forms less than 25% of the total atmosphere around us. Three times as much is nitrogen (N_2), plus a few trace elements such as argon. These inert gases are not usually required by

animal or plant life, and take no part in the chemical reactions essential for life (except for nitrogen, a special case). They are, nonetheless, part of the atmosphere.

In this booklet, when we refer to a specific gas such as methane making up an atmosphere, we are referring to the active element, which may make up only a fraction of the total atmospheric mix.

EXOTIC ATMOSPHERES

The *Traveller Book* defines exotic atmospheres as requiring the use of oxygen tanks, but not protective suits. In actual fact, some additional protective gear may be required in some instances, as noted in the specific descriptions below.

The basic definition indicates that exotic atmospheres will be found on worlds which have a fairly normal pressure and temperature range. Thus the worlds in question will be more or less Earth-like in everything but atmosphere.

Exotic atmospheres may be further broken down by the referee in much the same way as breathable atmospheres are. If this is desired, use the table below.

The table yields some data which is useful mostly for color — that which deals with the relative pressure of the atmosphere — plus information which is important to the classification of the atmospheric contents. Terms such as thin, standard, etc., refer strictly to atmospheric pressure, not to its composition. Atmospheres indicated as being irritant are borderline cases somewhere between exotic and corrosive atmospheres, and might require more than just an oxygen supply to keep characters alive and healthy.

Exotic Atmosphere Table (2D)

Die Roll	*Atmosphere*
2	Very Thin, Irritant
3	Very Thin
4	Thin, Irritant
5	Thin
6	Standard
7	Standard, Irritant
8	Dense
9	Dense, Irritant
10	Very Dense
11	Very Dense, Irritant
12	Occasional Corrosive

A roll of 12 Occasional corrosive, indicates an atmosphere which is normally exotic, but under the right conditions is far more dangerous. An example might be a nitrogen atmosphere which occasionally precipitates nitric acid. The atmosphere itself might be perfectly safe (with an oxygen supply), or only mildly irritant . . . a different matter entirely.

Some of the more common exotic atmospheres are discussed below.

Carbon Dioxide (CO_2): A non-irritant component of exotic atmospheres, CO_2 will be commonly occurring, either by itself or in various combinations. Earth itself once had an atmosphere which was mostly carbon dioxide, before certain organisms learned to use photosynthesis to break down CO_2 and release oxygen into the air.

Planets with carbon dioxide in the atmosphere may be worlds in the very early stages of developing Earth-like life (though within a mere few hundreds of millions of years the atmosphere will have changed completely), or they may have evolved life in a completely alien direction — with life forms which draw their energy from sunlight (without using photosynthetic reactions), or from thermal, radioactive, chemical, or even more unusual sources. Worlds with CO_2 in the atmosphere may not have developed life at all.

Carbon dioxide atmospheres have the property of trapping heat, causing a pro-

cess known as the greenhouse effect, which can cause planetary temperatures to rise far over the ranges in which humans could flourish without complete protective equipment. In order for an atmosphere of this kind to exist at a point defined as exotic (rather than some more extreme condition), the world will probably be rather distant from its star, and will probably have a fairly low pressure (very thin or thin). The hydrographic percentage of such a world would probably also be rather low — say in the region of 30% or less. All these factors would allow heat to radiate back from the planet despite the heat-retentive properties of CO_2. This information can help us visualize the planet quite effectively.

An exotic CO_2 atmosphere on a planet with more tropical conditions — warmer temperatures, greater hydrosphere, etc. — would be poised right on the brink of a runaway greenhouse effect which, within a few centuries at most, would turn the world into a hostile inferno. This might be put to good use by a referee, who could set an adventure on such a world against the backdrop of scientific research into the greenhouse effect — which will surely interest planetologists as much in the 50th century as it would today.

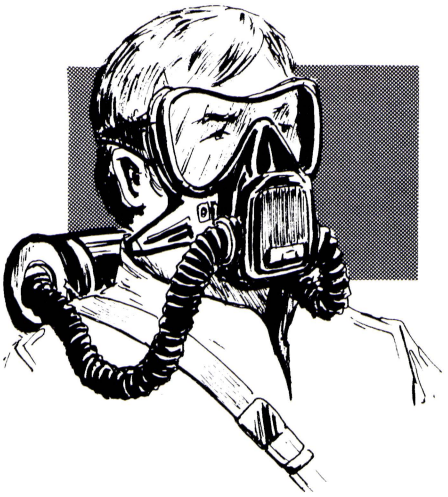
Nitrogen (N_2): A (usually) non-irritant component of exotic atmospheres, nitrogen is probably typical of the classic exotic type. Because nitrogen is relatively inert, atmospheres containing nitrogen in standard temperature and pressure ranges are rarely a problem.

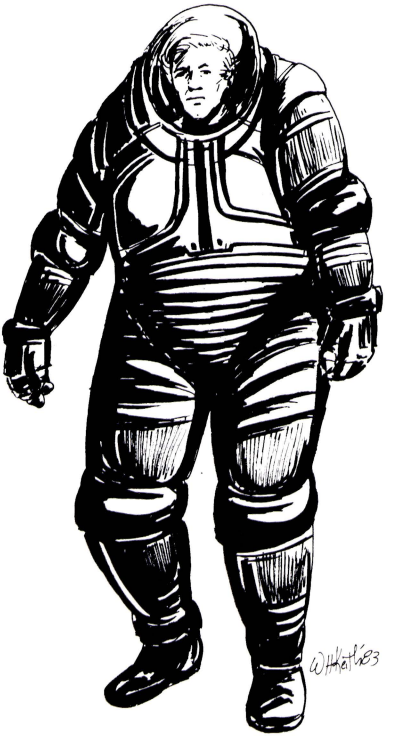
If nitrogen and oxygen are present in an atmosphere in certain combinations, the atmosphere becomes somewhat more hostile. Nitric acid (HNO_3) can form under certain conditions, as can other interesting compounds which can be irritants in low concentrations, or can make the atmosphere corrosive in higher doses.

An atmosphere containing nitrogen can be imagined on almost any type of world.

Methane (CH_4): A non-irritant component of exotic atmospheres, methane is found in terrestrial swamps as "marsh gas." It is also known as "natural gas," and the properties it exhibits on Earth are typical of the chief special danger methane poses to adventurers.

When methane is mixed with a normal oxygen-nitrogen atmosphere, the resultant combination can be quite dangerous. At a critical concentration of between 7% and 14% methane in the air, a spark can cause the methane to explode and burn fiercely. Though it is highly unlikely that free oxygen will be found in an atmosphere containing a high percentage of methane, there is a great danger that adventurers visiting a methane world could themselves create the proper conditions for an explosion. Airlocks which fail to cycle properly, or small leaks in ships, habitats, or space suits, could lead to a concentration of methane; electrical equipment (or static electricity) could cause a spark which will lead to a potentially devastating explosion and fire. Though associated with a foul smell in terrestrial swamps, methane is normally an





odorless, colorless gas which could easily pass unnoticed until it is too late.

Methane generally occurs as an active part of an atmosphere on large, cold worlds. The hydrogen which makes up part of the gas is usually lost early in the planet's history when the world is as small and warm as Earth. Thus, most worlds with methane in the atmosphere will tend to be larger (size 8 and up) and colder than generally habitable worlds. A dense or very dense atmosphere is most common. There are, however, exceptions — in the Solar System, Titan (size 4) has methane in its atmosphere, though it is quite a bit colder than a habitable world — requiring the need for protective clothing.

Ammonia (NH_3): Ammonia is an irritant found in some forms of exotic atmosphere, requiring some type of protection over and above the usual source of air to allow adventurers to survive. As an absolute minimum, ammonia in an atmosphere requires protection for the characters' eyes, nose, and mouth, and a form of gas mask would be one choice for protection. Another would be a transparent "goldfish bowl" helmet, sealed at the neck, into which an air supply is pumped.

Unlike methane, ammonia has a sharp and pungent odor, and leaks will be quickly noticed. An ammonia leak, even in a weakly concentrated ammonia atmosphere, will cause some damage to the character by burning eyes or mucous membranes. One point of damage is scored for every minute (four combat rounds) a character is exposed to ammonia.

Atmospheres containing ammonia will have to be extremely mild to classify as exotic rather than corrosive, for in any kind of concentration ammonia will cause serious damage even to exposed skin.

Worlds on which ammonia is found in the atmosphere will be much like those described for methane — large, cold and with atmospheres falling in the standard — very dense pressure range.

Chlorine (Cl_2): An irritant found in exotic atmospheres, chlorine is often postulated as a likely alternative to oxygen as a life-supporting gas. Chlorine is in many ways similar to oxygen, reacting readily in the same ways as oxygen in various chemical processes. This makes it a prime candidate as an atmosphere which would support life, though such life would be quite alien as compared with our own.

Greenish-yellow in color, chlorine is a deadly poison even in relatively small concentrations, though it can be detected by its odor long before it reaches a lethal level. It is also far more dangerous to exposed tissues than ammonia, and requires head-to-toe protective clothing. Lack of such protection causes the character to

take 2 points of damage every minute (1 every 2 combat rounds). In this respect, such atmospheres are more corrosive in nature, but a human could operate without protection for a short time and survive.

A planet with chlorine in its atmosphere would be a mysterious and eerie environment, with the shifting yellow-green haze causing the landscape to waver in a murky green half-light, hiding and distorting objects and shapes. Life forms evolving under such conditions would be quite alien in appearance, and might be expected to be more active and energetic than their terrestrial counterparts. This is because the superior reactive properties of chlorine could make the biological power plants to these chlorine breathers more efficient than those which run on oxygen.

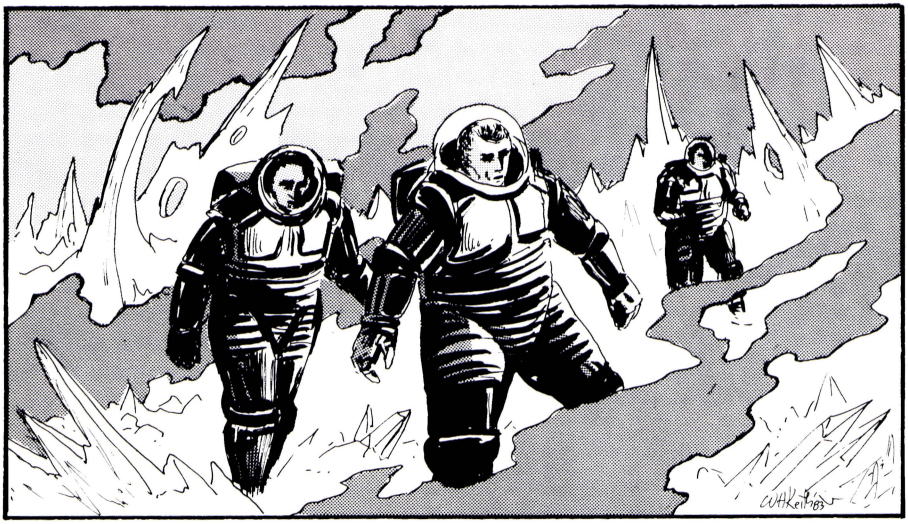
Sulfur Compounds: A variety of sulfur compounds can be found in various types of atmospheres, ranging from non-irritant and even up to corrosive in nature. These compounds can be found in the atmospheres of otherwise perfectly Earth-like worlds, and indeed are one of the prime components of smog.

In exotic atmospheres, sulfur compounds might represent the result of an extreme atmospheric taint resulting from prolonged heavy industrialization. Other components of the atmosphere could include oxygen, nitrogen, and other perfectly normal gases, but the air would be completely unbreathable. In other cases, sulfur compounds can be encountered as part of the natural atmosphere of a world, and probably go hand-in-hand with a great deal of volcanic activity.

Sulfur compounds would be a good alternative to the usual carbon-based organic chemistry. These would lead to a totally alien group of life forms.

CORROSIVE ATMOSPHERES

Corrosive atmospheres require the use of protective suits or vacc suits to insulate the wearer from harm. Several of the exotic atmospheres classified as irritant are, in fact, mild forms of corrosive atmospheres. The chief difference between the two lies in the degree of danger posed by the atmosphere — irritants cause only minor damage, while true corrosive atmospheres kill unprotected humans in a short time.



When creating a world with a corrosive atmosphere, the referee may wish to fill in additional details as to the nature of the specific environment. The corrosive atmosphere table, on the next page, is one way of supplying such background. The table gives results which can define the nature of an atmosphere.

Corrosive Atmosphere Table (2D)

2	Extreme Low Temperature
3	Very Thin, Low Temperature
4	Very Thin, Moderate Temperature
5	Very Thin, High Temperature
6	Thin/Standard/Dense, Low Temperature
7	Thin/Standard/Dense, Moderate Temperature
8	Thin/Standard/Dense, High Temperature
9	Very Dense, Low Temperature
10	Very Dense, Moderate Temperature
11	Very Dense, High Temperature
12	Extreme High Temperature

A designation of pressure (primarily of use to add color to a world's statistics) is given, as is a description of the temperature. A low temperature is one which averages between −25° and −200° C. Moderate temperatures are those which allow life (as we know it) to survive. High temperatures run over 50° C. Extreme temperatures are at the upper and lower ends of the temperature scale, and require extra equipment to compensate for the difficulties encountered.

In general, there are two major reasons for a designation of corrosive to be applied to an atmosphere. These are covered below.

Some corrosive atmospheres are the result of concentrates of corrosive chemicals in the air. Several of these have actually been covered previously, in the exotic atmospheres section, but are considered corrosive when they occur in higher concentrations. They are discussed again, in brief, in this section.

Nitrogen (N_2): A world in which free oxygen and nitrogen exist together in the correct proportions will have a corrosive atmosphere. In this case, seas of nitric acid and the presence of nitrides (nitrogen-oxygen compounds) in the atmosphere cause it to become most dangerous for unprotected humans.

Ammonia (NH_3): An irritant at best, atmospheres containing high concentrations of ammonia become corrosive. Usually characteristic of low temperatures.

Chlorine (Cl_2): More active, more poisonous, and more irritating to exposed skin than ammonia, chlorine in the atmosphere will be corrosive in any but the mildest concentrations.

Sulphur Compounds: The presence of sulfur compounds in sufficient concentrations will be corrosive, and can cause damage to unprotected individuals.

Fluorine (F_2): Similar in nature to chlorine, fluorine in an atmosphere is even more irritating, even in small quantities. Atmospheres containing fluorine are always considered corrosive at best. Fluorine shares many properties with chlorine, including the possibility of supporting completely alien forms of life. It is easily detected by smell and by color, but quickly lethal if a major leak occurs.

Corrosive effects, requiring the use of a protective outfit, can be the result of factors other than the mix of gases in the atmosphere. Temperature is the most important of these. No matter what gases comprise the atmosphere, a very low

or very high temperature will kill an unprotected human in a matter of minutes.

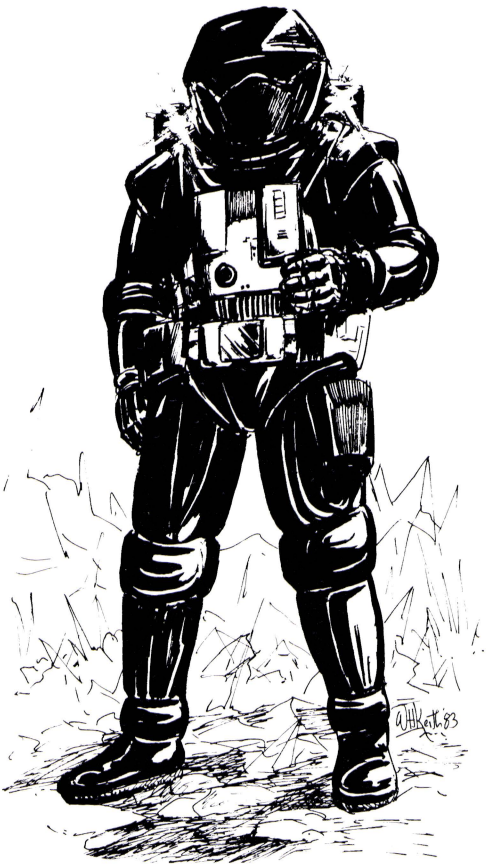
The actual gas mixes which go with worlds with hostile temperature ranges will vary. For worlds with high or extremely high temperatures, atmospheres can include our own familiar oxygen-nitrogen mix, carbon dioxide, nitrogen, chlorine, or fluorine, possibly with interesting sulfur compounds mixed in. Low-temperature worlds tend to have combinations of methane and ammonia in their atmosphere.

To combat problems of temperature, protective suits and vacc suits must be equipped with suitable heating or cooling equipment. Such equipment (normally built into vacc suits and is available for installation and use with protective suits) will combat the effects of temperatures designated as low or high. Extreme temperatures cause further problems, and can put the atmosphere over the edge into an insidious classification without heavy-duty equipment and multiple backup systems. See the section on equipment for some specific items designed to combat these problems.

INSIDIOUS ATMOSPHERES

The most dangerous of all atmospheric types encountered by **Traveller** adventurers is the insidious atmosphere, defined as an atmosphere similar in nature to corrosive, but capable of defeating any personal protective measures in 2 to 12 hours.

Most of the atmospheres discussed as being corrosive in nature can, in sufficient concentrations or under the proper circumstances, be considered insidious. For example, a planet with high percentages of chlorine in its atmosphere at an Earth-like pressure and temperature could be expected to have large amounts of hydrogen chloride gas in the air and seas of liquid hydrochloric acid. Hydrogen chloride droplets would condense on exposed portions of a vacc suit, work their way into joints and crevices, and might eventually cause the suit integrity to give way entirely in dozens of small but lethal leaks.



One specific type of insidious atmosphere that might be encountered would be made up of a surprisingly harmless gas mix — simple hydrogen (H_2). The smallest and lightest of all atoms, hydrogen poses a special problem that makes its classification as a component of an insidious atmosphere necessary. The atoms are so small that they can seep right through fabrics, plastics, and even solid metal in a process known as diffusion. An air-tight seal is not necessarily hydrogen-tight.

Hydrogen is not poisonous. However, like methane, hydrogen and oxygen which

come together combine explosively. A spark can cause an explosion, followed by the precipitation of drops of water — the product of the combination of these two elements.

Starship hulls and the walls of buildings can be sealed against hydrogen leakage. Vacc suits, however, cannot be built with sufficient resistance to hydrogen diffusion; to do so would cause the suit to be far too bulky and massive to allow the wearer to move freely.

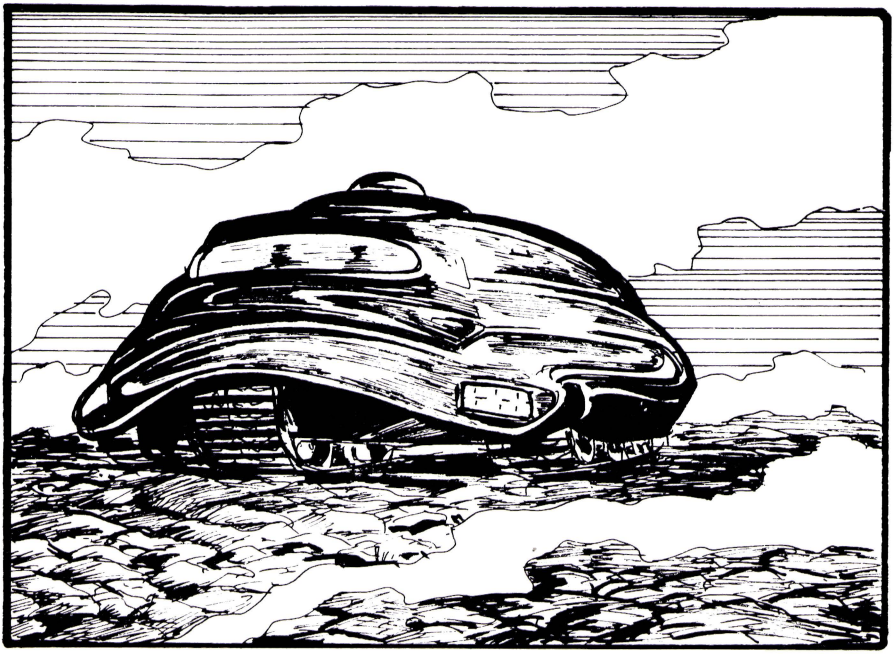
Hydrogen will make up a significant proportion of the atmosphere on large, cold worlds, and is often found in combination with methane and ammonia.

Temperature can also be the element which makes an atmosphere insidious. For example, in our solar system, the planet Venus has an atmosphere composed largely of CO_2, a gas which is not corrosive in nature. However, the temperature on Venus is in the neighborhood of 480° C, and the pressure 90 times that of Earth at sea level. Probes sent into this inferno rarely last more than a few hours.

Though highly efficient heating or cooling systems can compensate for high or low temperatures to a certain extent, it is very difficult to equip a personal protective suit, or even a vehicle, with compensating systems that can offset such enormous temperature problems. A starship or large habitat can be designed to overcome the effects of extreme heat or cold; for lesser equipment, a temporary respite is the best that can be hoped for.

The final agent which can cause an environment to be considered insidious is high radiation. It is very difficult to shield individual suits against the effects of intense radiation, such as might be encountered on a planet very close to a large hot sun, within the radiation zone of a gas giant, or on worlds where recent nuclear wars have devastated the world.

In this context, the time limit given by the protection's duration would not represent the gradual failure of the suit, but would instead indicate the amount of exposure an individual could take. Moreover, exposure would be a cumulative matter



— on a planet where radiation is lethal after 6 hours, a character may spend no more than 6 hours on the surface. If he spends 2 hours outside, and then returns to the ship, he can spend only four more hours on later trips. Exceeding this overall time factor will result in the character's death, or will at least make him extremely sick from radiation poisoning.

Insidious atmospheres of all forms pose a special danger to adventurers. Further details are left to the referee to develop to best fit the adventure situation. For a good example of an insidious atmosphere (of the type caused by chemical reactions), the interested reader should see *Ordeal by Eshaar,* an adventure approved for use with **Traveller** published by FASA Corporation. This adventure shows some special hazards, and even addresses the question of life forms which might exist in an insidious atmosphere environment.

REFEREE'S NOTES

In utilizing these detailed developments of exotic atmospheric types, the referee is encouraged to use imagination and creativity to supplement the bald facts derived from world creation information. Some gas types are noted as occurring most frequently on specific worlds. When a world is created which turns out to have an exotic, irritant atmosphere, at high pressure, with a size of 9, the referee can look through the descriptions and choose ammonia as

carbon dioxide
carbon dioxide-sulphur dioxide
methane-ammonia-hydrogen
chlorine-nitrogen
fluorine-carbon dioxide
fluorine-sulphur tetrachloride or other sulphur compounds
hydrogen
carbon dioxide-nitrogen
methane-ammonia
chlorine-carbon dioxide
chlorine-disulphur dichloride
fluorine-nitrogen

a prime ingredient, further noting that the planet will tend to be a cool one. He can go further, indicating a methane-ammonia mix, which will mean that the problems associated with both gases will be found on the world in question.

By and large, gas mixtures will revolve around one or two active ingredients, plus one or more inactive ones. Some fairly common mixes are noted on the previous page.

This list is by no means definitive, but gives an idea of the possibilities. When combining gases, their effects are also combined. An idea of proportions should be kept in mind at all times. An atmosphere composed of chlorine and nitrogen might be considered exotic if the chlorine concentration were relatively small, corrosive if it were somewhat higher, and insidious if it were higher still . . . an important difference from the point of view of the adventurer who must deal with it. Exact percentages are not required — but a feel for the various mixes will help lend color and consistency to the setting.

EQUIPMENT

The equipment described in this section is designed for use in various types of hostile atmospheric conditions.

Protective Mask: For use in irritant atmospheres, the protective mask covers the wearer's mouth, nose, and eyes, and hooks up to an oxygen supply. This is ideal for use in atmospheres containing mild amounts of ammonia, sulfur compounds, and/or minimal amounts of chlorine.

Available at tech level 6, the protective mask weighs 500 grams (plus oxygen tanks), and costs Cr25.

Transparent Helmet: A "goldfish bowl" type of helmet, this protective device has certain advantages over the protective mask. It is lighter, offers more complete protection against irritant atmospheres, and does not hamper the wearer as much as the clumsier mask. The helmet can also be worn with a protective suit or vacc suit in corrosive atmospheres.

The transparent helmet weighs 750 grams (without oxygen tanks), and costs Cr30. It is first available at tech level 8.

Suit Heater: A portable heating unit which is used in protective suits to combat the effects of low-temperature corrosive atmospheres. Without a suit heater, a protective suit is worthless in these conditions.

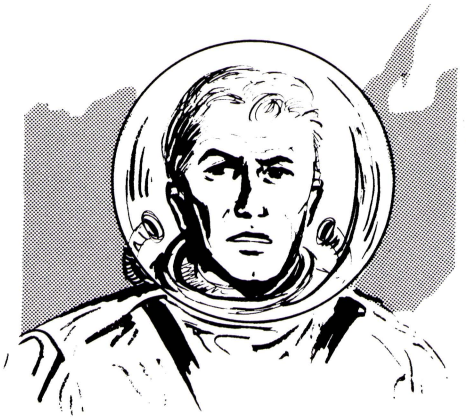
In insidious cold atmospheres, the standard suit heater is good for 2-12 hours before failure. A heavy duty version of the heater will allow a DM + 4 to the duration throw (6-16 hours). Weights include additional suit insulation.

The standard suit heater weighs 3 kg, costs Cr250, and is available at tech level 8. The heavy duty heater becomes available at tech level 10, weighs 5 kgs, and costs Cr450.

Suit Air Conditioner: A cooling unit designed to function in hot atmospheres as the suit heater functions in cold. Effects of standard and heavy-duty versions are roughly the same as described for the heaters.

The standard suit air conditioner weighs 3 kilograms, costs Cr200, and is available at tech level 8. The heavy duty version costs Cr375, weighs 6 kilograms, and appears at tech level 9.

Powered Vacc Suit: A heavy-duty vacc suit designed specifically for use in insidious atmospheric conditions. The powered vacc suit contains extra-heavy



shielding, especially around the joints, and is extremely effective at slowing the process of corrosion due to acidic condensation. It also retards hydrogen diffusion, and contains heavy-duty heating and cooling systems. To counteract the excessive weight and bulk of all this protection, the powered vacc suit features the same enhancement effects found in battle dress.

The powered vacc suit gives a DM + 4 to duration rolls for insidious atmospheres (except lethal radiation). It does not provide enhanced characteristics, as the weight of the suit itself offsets this aspect of the equipment. Battle dress skill is required to operate the powered vacc suit; if desired, 1/2 vacc suit skill can be applied instead.

The powered vacc suit costs Cr150,000 and is available at tech level 13. It weighs 25 kilograms; this weight is ignored when the suit is worn. Armor is equivalent to combat armor.

CREDITS

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This booklet ia a special supplement for **Traveller,** GDW's science fiction role-playing game set in the far future and originally appeared as a pull-out supplement to the *Journal of the Travellers' Aid Society,* issue number 17.

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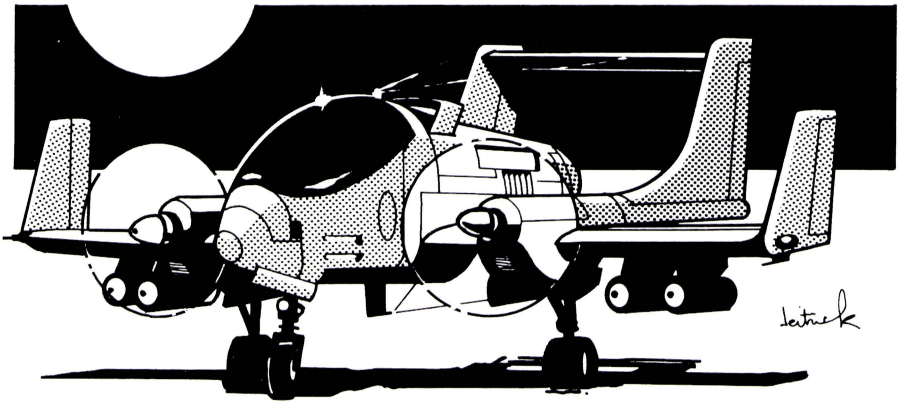
This special supplement provides a more detailed and comprehensive look at exotic, insidious, and corrosive atmospheres. It originally appeared as a pull-out section in the Journal of the Travellers' Aid Society, issue number 17.

AIRSTRIKE:



A Close Air Support Rules Module for Mercenary

Mercenary characters may find themselves on the receiving end of airstrikes from hostile close orbit and aerospace control forces, or have a need to call in tactical air support to aid them in attacking or defending against opposing units. Those who own GDW's *Striker* will not find this a problem. This article is for those who do not.

Thanks to the additional character generation tables found in Supplement 4, *Citizens of the Galaxy,* it's possible to generate close orbit and aerospace control force characters. These may join mercenary air combat units during their personal adventures, and fly missions in support of ground combat units.

To show what can happen in situations where tactical air support is used, here are some rules covering this aspect of combat.

AERIAL WEAPONS

Tactical aircraft and spacecraft carry a variety of weapons including machine guns and autocannon, rockets, bombs, and energy weapons. Generally speaking, their effects are similar to the effects of field artillery described in the back of Book 4, *Mercenary.* They are, however, more deadly and more accurate than artillery barrages because of their often greater size and because they are direct fire weapons.

Spotting: Tactical aircraft pilots often have great difficulty in successfully attacking ground targets, particularly when they are in close proximity to friendly forces and the danger of hitting friendlies is high. Therefore, in order for aircraft and spacecraft to successfully hit their targets, forward observers must spot for them and direct their fire. Helicopters and light attack aircraft have less trouble because they fly at lower altitudes and slower speeds, and because they have on-board observers. Observers can either be on the ground or aboard helicopters, air rafts or LAAs, as long as they have the target in direct line of sight. Observers give attacking pilots the target's range and bearing from a fixed reference point and correct their aim on subsequent firing runs.

Often the reference point and the location of friendly forces is marked with colored smoke grenades or florescent recognition panels. Airborne spotters also mark targets with smoke rockets.

Anyone who has a line of sight to the target and has a radio link to the attacking aircraft can spot for the attacker. Forward observer skill will act as a positive DM in directing the fire on target.

Scattering: Most of the aerial weapons listed below have a "to hit a designated target" die roll number that must be rolled or exceeded on 2D, subject to forward observer and aircraft skill modifiers. If this roll is not made, then this weapon misses its intended target and scatters. The scattering effect is difficult to handle on the simple range band set-up used for basic **Traveller** adventures. However, if blank hex paper is being used to plot the battle, it's easy to identify the direction and distance of scattering, and the various weapons' blast radii with respect to the intended and adjacent targets under air attack.

To determine scattering, roll 1D for the direction — a "1" result indicates the weapon scattered beyond the target parallel to the line of flight. (An "over".) The remaining numbers indicate the direction of hexsides rotating around the hex in a clockwise direction. (A roll of "4" would indicate a miss also parallel to the line of flight but in front of the intended target area — a "short" miss). To determine miss distance, roll 1Dx10 for the distance in meters.

HARDWARE

Machineguns and Autocannon (TL5-10): Roll 8+ to hit for aircraft machineguns and autocannon. Apply aircraft and gunnery skill of pilot as positive DMs. Fixed wing aircraft machineguns and cannon attack at long range when the attackers fire at below 250 meters altitude, at very long range below 500 meters altitude. Strafing fire is not possible from aircraft above 500 meters. Helicopters can fire their weapons at medium range at altitudes below 50 meters. Roll to hit three times for each firing weapon and resolve as for light machineguns or autocannon using appropriate DMs from the Book 4 target and range tables. Also see Book 4 for prices. Machineguns and autocannons are either mounted in fixed positions aboard aircraft or in detachable gun pods slung under fuselage or wing weapons stations.

Rockets (TL6-10): Two sizes of rockets are commonly available: 70mm and 125mm rockets. The former come in pods of either 7 or 19 each, the latter either in paired disposable launch tubes or individually for launching from underwing rails. The 7-round pods weigh 50 kgs each, the 19-round pods 50 kgs. The 70mm rockets have a 1,000 meter range and a 5 meter blast radius; the 125mm a 1,500 meter range and a 10 meter blast radius. Multiply the blast radius per rocket times the number of rockets fired in salvo to yield the total blast area's radius. Roll 4+ to hit the designated target area, apply aircraft skill of pilot and forward observer skill of observer as positive DMs. Roll 6+ to hit each person in the blast radius. Use armor DMs for the 4cm HE RAM grenade. Roll 6D wound points for each hit. Smoke, armor piercing and flechette warheads (double blast radius — 4D damage) are available in addition to high explosive warheads. Price: Cr350 for a 70mm 7-round pod, Cr950 for a 70mm 19 round pod, Cr250 for a pair of 125mm launch tubes, Cr100 for an individual 125mm rocket.

Bombs (TL5-12): Various size high explosive bombs are available ranging from 100 kgs to 1000 kgs in weight. The most common sizes are 200 kgs, 350 kgs and 450 kgs. There are three varieties of bombs: low-drag finned

bombs (slicks), high-drag bombs fitted with air brakes, and smart bombs capable of homing onto a laser illuminated target.

Pilots carrying high-drag bombs can drop their weapons from a lower altitude because, thanks to the weapon's retarded fall, they can escape the blast zone before the bomb detonates. High-drags are therefore more accurate — however, pilots will expose themselves to more anti-aircraft fire while dropping high-drag bombs instead of slicks. High-drags are also more expensive. High-drag bombs are, of course, useless in vacuum or very thin atmospheres, as are the smart bombs' finned laser guidance systems.

Roll 6+ for a bomb to hit a designated target, DM +2 for a high-drag bomb; DM +4 for a smart bomb attacking a laser illuminated target. Add aircraft skill of the pilot, and forward observer skill of the forward observer as positive DMs to the "to hit" die roll.

Personnel within one quarter of the blast radius are killed on a roll of 2+. personnel within one half of the blast radius are attacked with the target modifiers for a FGMP 14/15 and sustain 16D damage on a roll of 6+. Targets within the remaining blast radius are attacked with the target modifiers used with a 4cm high explosive RAM grenade and sustain 8D damage on a roll of 6+.

DMs to the damage roll: −2 if target personnel are dug in; −3 if target personnel are in stone building(s); −1 if personnel are in forested terrain.

Napalm (TL6-8): Napalm firebombs are extremely effective anti-personnel weapons. However, they are heavy and must be dropped from very low altitude, which somewhat limits their usefulness. Also, they cannot be used in vacuum or very thin atmospheres unless they have been specially formulated (which increases their price by 10%). Napalm consists of a petroleum-based fuel mixed with an aluminum powder thickener, white phosphorus and charcoal to enhance its effectiveness (special bombs for use in vacuum or very thin atmospheres have an added oxidizer). The mixture is used to fill 450 kg bombs with blunt ends and no fins. These bombs are designed to tumble for maximum dispersion of the flaming fuel and are therefore only moderately accurate. Roll 8+ for a napalm bomb to hit a designated target area; forward observer and aircraft skill DMs apply. Each bomb spreads fire over a 20 meter wide by 100 meter long elliptical "footprint" beneath the aircraft's line of flight. Persons within the "footprint" automatically suffer 10D wounds. There are no exceptions for cover, as the fire consumes oxygen suffocating as well as burning the victims. Price per bomb: Cr750.

Cluster Bomblets (TL7-12): These weapons consist of bomb-shaped canisters containing hundreds of spherical plastic explosive bomblets that scatter over a wide area and release a cloud of anti-personnel flechettes when they explode. A typical cluster bomblet

Bomb Table

Weight	*Blast Radius*	*Price*
100 kg	30 meters	Cr150
200 kg	60 meters	Cr300
350 kg	100 meters	Cr500
450 kg	150 meters	Cr750
1000 kg	250 meters	Cr1500

Note: +Cr100 per bomb for high drag brakes, +Cr500 per bomb for laser guidance.

unit (CBU) weighs 200 kgs and has a 120 meter wide kill zone. Personnel in the kill zone should suffer 3D wounds on a 6+ roll modified by 4cm RAM grenade flechette round armor DMs and by a DM −2 if dug in, a DM −1 if in forest, and a DM −4 if in a stone building. Price: Cr1,000.

Energy Weapons (TL 12-15): These are mounted aboard advanced attack aircraft, grav sleds and spacecraft used in the ground support role. A detailed treatment of plasma gun and fusion gun combat results, price and specifications is contained in Book 4, *Mercenary.* The standard 250-megawatt laser, classified as a factor-1 beam laser in Book 5 *High Guard,* totally destroys all life and structures in a 50 meter target radius. These are found mounted singly or in double or triple batteries aboard TL 14 or TL 15 fighters. Price: MCr1.

AIRCRAFT AND SPACECRAFT

A wide variety of attack aircraft and spacecraft are available on worlds from TL 5 to 15. They range from rather primitive propeller-driven craft through high speed attack jets to fusion powered space fighters assigned to planetary attack missions. Helicopter gunships and combat grav sleds also fall within the scope of these rules. However, rules covering grav sleds also overlap into armored fighting vehicle combat rules, and are covered fully in *Striker.*

Here are a few examples:

Helicopter Gunships (TL 7-9): A variety of helicopter gunships are organic to many mercenary infantry battalions, providing close-in air support on demand from the battalions' units. They are typically light-weight, streamlined, tandem-seated helicopters carrying a pilot and gunner/observer. Most examples carry autocannons and/or RAM autogrenade launchers in a nose turret and pods of forward-firing rockets on weapons stations attached to the fuselage. Some are equipped to launch tac missiles from the fuselage weapons stations. Helicopter gunships cruise at 300 kph and can remain airborne for two hours before refueling. Price: MCr0.5.

Light Attack Aircraft (TL 6-10): The light attack aircraft is a twin-engined,

twin-tailed high-winged monoplane powered by turboprop engines for maximum fuel efficiency. This aircraft is specifically designed for easy maintenance and rugged duty from forward airstrips in direct support of mercenary and other combat units, and are often found in mercenary battalions' aviation platoons. Its engines can easily be adapted to burn hydrogen, methane, alcohol or petroleum based fuels by using appropriate fuel tankage and feed systems.

The light attack aircraft carries a pilot and an observer seated in tandem and has four weapons stations that can carry up to 450 kgs of ordnance each. It also carries four 7mm light machineguns with 500 rounds of ammunition per gun in fixed forward-firing mounts.

Combat radius is 360 kms, one-way ferry range is 2,200 kms. When operating from airstrips close to the battlefield, this aircraft can remain aloft on patrol for four hours. Speed, 400 kph combat loaded and 450 kph clean. Price: MCr0.75. More primitive reciprocating engine light attack aircraft carrying half the ordnance load at 75% the speed are available at TL 5.

Medium Attack Aircraft (TL 6-10): The medium attack aircraft is a lightweight low-winged single engine jet designed to operate with a minimum of maintenance from forward airbases. While requiring more prepared airstrip than the LAA, the medium attack aircraft is simply and ruggedly constructed with its engine, weapon and electronic components designed for easy maintenance and modular replacement. The MAA's engine can also be adapted to burn a variety of fuels. Its compact size (8-meter wingspan, 12-meter length and 4.5 meter height) and light weight (4,700 kgs) enable it to be easily transported aboard commonly available starships.

The medium attack aircraft has five ordnance stations. Its centerline station carries up to 1600 kgs, the two inboard wing stations up to 1200 kgs each, and the two outboard wing stations up to 450 kgs each. The medium attack aircraft also has two 20mm fixed forward firing autocannon built into its wing roots with 200 rounds per gun.

It normally carries only a single pilot; however, dual tandem seat versions are available for training or command and control missions. The medium attack aircraft flies at 950 kph and has a 1000 km combat radius. By carrying an extra 3,000 liters of fuel in drop tanks beneath the centerline and the wings, the MAA can fly up to 3000 km on one-way ferry missions. Price: MCr2 for the single seat version, MCr2.5 for the dual seat aircraft.

Heavy Attack Aircraft (TL 7-10): The heavy attack aircraft is a heavily armored, heavily armed ordnance delivery system for air to ground ordnance designed to withstand the most hostile combat environment. Its Cr10,000,000 price per aircraft generally precludes it from being flown by all but the wealthiest mercenary air wings; however adventurers may frequently find this aircraft flown in combat by regular planetary forces, or by Imperial forces assigned to duty on low- to moderate-tech level planets.

Several varieties of heavy attack aircraft exist, the most prized being a twin-engined low-wing turbofan powered monoplane mounting a heavy autocannon designed for anti-armor work. This aircraft has a 500 km combat radius with a two-hour loiter time over the battlefield, a 1000 km deep strike combat radius without loiter time, and a one way 4,000 km ferry range.

This aircraft carries 7,200 kgs of ordnance load distributed among 16 underwing hardpoints and a centerline hardpoint. In addition, it carries 1,000 rounds

for its built-in autocannon.

Beginning at TL 5, a more primitive propeller driven heavy attack aircraft is available. Although flying at half the turbofan's 700 kph combat speed, the prop driven HAA carries 6,000 kgs of ordnance distributed among 16 wing stations, and has four autocannon with 200 rounds each built into its wings. Over time, it has proven to be a battlefield workhorse in relatively low threat air combat environments. Price for primitive version: MCr1.

Spacecraft (TL 8-15): Mercenary units may find themselves supported by a variety of spacecraft ranging from provincial cruisers and system defense boats used as orbital artillery platforms to space fighters assigned to ground support missions. These craft will usually use either laser cannon or energy weapons, however, high explosive bombs or missiles may also be employed. In situations where mercenary units are involved in all out warfare on the side of Imperial or other major forces, nuclear missiles may be launched by spacecraft either against them or in their support. These craft are built and priced according to Book 5 *High Guard.* Some fighter examples are contained in the first edition of *High Guard,* a provincial cruiser design is contained in issue 8 of the *Journal,* and a system defense boat design is included in Supplement 7, *Traders and Gunboats.*

HISTORICAL EQUIVALENT AIRCRAFT

Light Attack Aircraft = North American OV-10A Bronco

Medium Attack Aircraft = McDonnell Douglas A-4 Skyhawk

Heavy Attack Aircraft = Fairchild Republic A-10 Thunderbolt (Warthog) or LTV A-7 Corsair II (SLUF)

Attack Helicopter = Bell Aerosystems AH-1J, AH-1S, or AH-64 (Apache).

— *Terry McInnes*

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Hunting Bugs: Striker Meets Horde

Double adventure 5, *The Chamax Plague/Horde,* gives **Traveller** players the dubious honor of meeting a dangerous alien species that swarms over the countryside, devouring everything in sight (including adventurers). When these vaguely spider-like omnivores infest the planet Raschev, a struggle for survival on a gigantic scale ensues. Though the "bugs" are unintelligent, communal creatures — like army ants on Earth — attempts to contain the infestation of these hungry beings are of necessity military operations. Here we have a chance to bring in *Striker*, and the possibility of resolution of these unusual and desperate campaigns in miniature.

BACKGROUND

As explained in Double Adventure 5, the bugs on Raschev have phenomenal powers of reproduction. Because of this, they become very numerous very quickly. Communal nests are controlled by the huge maternal, a sausage-shaped creature (massing 1500 kgs) that takes in food at one end and turns out an inexhaustable supply of hunters at the other.

Young maternals are small, winged creatures that fly until they discover a choice nesting site. They then metamorphose and begin producing at the same prodigous rate.

Hunters are found in three general states. Hibernating hunters are found when lack of food or low temperatures cause the nest to slip into a state of very low awareness to conserve energy. Questing hunters are sent out to locate food when there is a short supply. Finally, aroused hunters strip the countryside bare of edible food, attacking anything living with incredible ferocity. Aroused hunters are those most frequently encountered on Raschev.

The nest is linked together by an organic radio sense, and various other unknown senses allow the bugs to seek out and eat living things. Food not needed by the hunters is carried back to the nest for use by the maternal. Another interesting ability is the use of acid for tunneling, which means that obstacles hard-

ly slow down an attacking swarm. Acid also causes a great deal of danger for vehicles of all kinds.

For more information on bug abilities and behavior, refer to Double Adventure 5.

BUGS IN STRIKER

Setting up a *Striker* battle using a bug infestation presents certain problems. The most prevalent is that of bug numbers. We're not dealing with fireteams or squads or platoons; a small area can hold literally hundreds of attacking bugs at a time. This is the chief danger they pose. Though they can be killed easily, there are always more to press home the attack.

Even if appropriate figures were available, no one could afford to buy enough to fight a large-scale battle. Although less satisfying visually, it is suggested that bugs be represented by squares of paper the size of a fireteam base. This area can contain up to 25 bugs; the exact number in any given space being determined by the referee.

Casualties are determined as usual, but with certain modifications. Bugs are individually rather easy to kill, but are not easy to stop by wounding. Light and moderate wounds are therefore ignored; serious and kill results kill the creature. Bugs have armor which is treated as cloth for all purposes.

Bugs move and fight as a group. They attack by melee only, but have potent acid at their disposal. Acid has a penetration value of 2 *each turn per each bug*. This means that a large enough group could penetrate the strongest armor in a turn or two.

Movement should be regulated by the referee. Bugs move towards sources of food. Generally, the strongest concentrations of living things draw them first. Only one thing overrides this basic directive, and that is the use of radio, radio jamming or radar, all of which send out signals that attract them. All bugs will move towards the most attractive target as quickly as possible (7.5 cm per turn).

Maternals should be represented individually. Mature maternals are normally immobile, and live inside caves, buildings, or other sheltered areas. At times, however, they are carried on the backs of several hundred hunters as part of a huge moving column. Juvenile maternals are very mobile — with movement of 20 cm per turn — and can be encountered flying in search of a new nesting site. Some can almost always be found near an established nest too.

STRIKER SUGGESTIONS

In setting up a game or campaign involving the bugs, it is strongly urged that the referee be charged with controlling their actions entirely. Players should be defenders, faced with the almost unstoppable bug horde. This makes the situation an ideal one for learning how to handle the *Striker* rules effectively. Since the bugs are not intelligent, they will be following basically preprogrammed maneuvers. They lack the ability to fight from a distance. Therefore, players can concentrate on handling their own units, calling in fire missions, and otherwise becoming accustomed to *Striker* combat.

The bugs have neither morale nor initiative. They attack until none are left, and ignore casualties entirely. All hunters are required to attack sources of food; note that they will always head towards the nearest source of food, be it a platoon of troops or a stand of trees. When a particular food source is thoroughly covered by bugs, others automatically seek out the nearest target.

Juvenile maternals are given considerably greater freedom of action, and can be used by the referee as "spoilers", moving freely to cause trouble. Mature

maternals in mobile nest-columns should be shown as taking up about 25 meters (1 inch), resting at the junction of four bases mounting hunters.

Any time radio transmissions are made, bugs will move towards their source. The only ones exempted are those already eating. For two turns after a radio is used, bugs will converge on it; then they will return to their original movement patterns. If several radios are in use, bugs will home in on the nearest one.

In the same fashion, bugs home in on radar and radio jammers. Although radio jamming disrupts their inter-nest cooperation somewhat, the effect is pretty well offset by the attraction of the transmitter itself.

In scenarios of this kind, bug numbers should begin at perhaps 2D x 100. Reinforcements, however, will be constantly drawn to the scene. It s suggested that the referee set a specific reinforcement schedule for the bug hordes, and also a specific end turn for the scenario. For example, defenders might have to hold open a road for a set number of hours to allow civilians to escape. Sooner or later the defenders will be overrun; the object is to hold out as long as possible, and then break off contact quickly.

Terrain: Raschev is a fairly normal world, with a temperate climate and standard atmosphere. Much of the prime battleground on the Jourin Peninsula is rugged, with forested areas and many hills and mountains. As the infestation progresses, the bugs literally strip the countryside bare. A scenario taking place behind the limits of their expansion will not use trees or undergrowth; those in which humans are defending may have woods which draw off bug strength.

Running the Game: The purposes of the game will best be served if the referee does a good job of controlling the bug hordes. The rules presented here are a general guideline; it is up to the referee to embellish them and make the situation come alive.

For scenario situations, the referee is encouraged to examine the various situations in Double Adventure 5, *Horde.* Many of these can be well-adapted to *Striker* situations.

THE ARMY OF RASCHEV

The bugs are a great threat to Raschev largely as a result of the horde's great numbers and the relatively low technology (Tech Level 6) of the world. Raschev, a peaceful backwater planet, is ill-prepared for an attack. It is strongly urged that this flavor be retained when using *Striker.* If mercenary units are employed, they should be of limited size, limited technology, or integrated as cadres in the Raschev militia. A fair-sized unit with good equipment and reasonable quality troops will not be too badly threatened by the bugs, thus destroying the tension and excitement of the game.

Units of the Raschev military can be employed in almost any scenario. Units of this army (TL-6) are armed with an ill-assorted collection of rifles, shotguns, SMGs; a few light machineguns are occasionally found for infantry support. A light armored force, a few recon planes, and some transport helicopters are also available.

Units are set up according to the militia organization from *Striker.* Three fireteams, plus an NCO, make a squad. Two squads make a section, while a platoon is formed from two sections, an additional squad, and a command group of three individuals. Companies consist of three platoons each, and battalions of three companies each. The army on Raschev is not large, and consists of perhaps ten battalions and a handful of

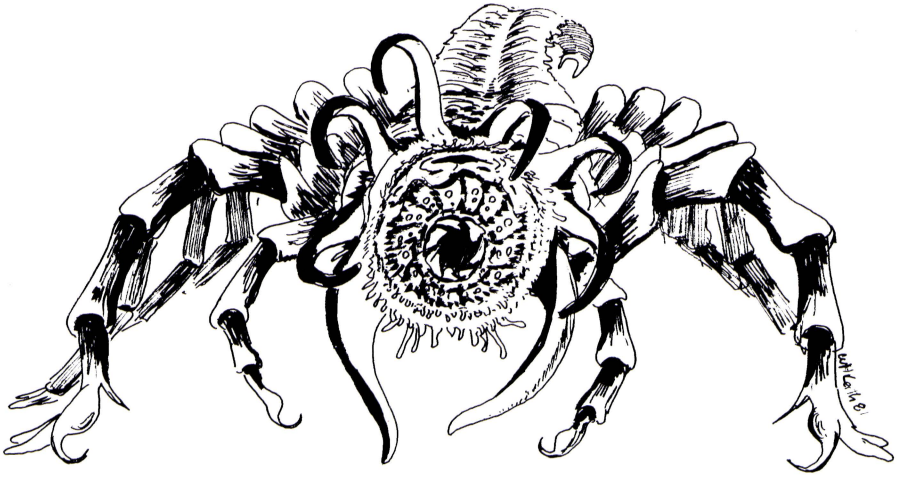
independent units. There are only two companies of armor on the planet.

A wide variety of vehicles and aircraft are employed by Raschev's military and para-military forces. *Striker* statistics for certain standard designs may be taken directly from *Striker* book 3, Equipment.

The referee is encouraged to develop other similar vehicles (keeping in mind the simple nature of Raschev's military) to lend variety to the situation. Offworld vehicles used by adventurers or mercenaries can also be of interest.

As adventures for **Traveller**, *Chamax Plague* and *Horde* are interesting situations that hark back to SF classics like War of the Worlds. But, like so many elements of **Traveller**, there are other ways to enjoy the situations presented. This article has looked at one alternative, for those whose interests are directed at military miniatures. Referees and players should look for others, both in Double Adventure 5 and in all the other situations, scenarios, or adventures they encounter. Variety, after all, is the hallmark or **Traveller**.

— *John Marshall*



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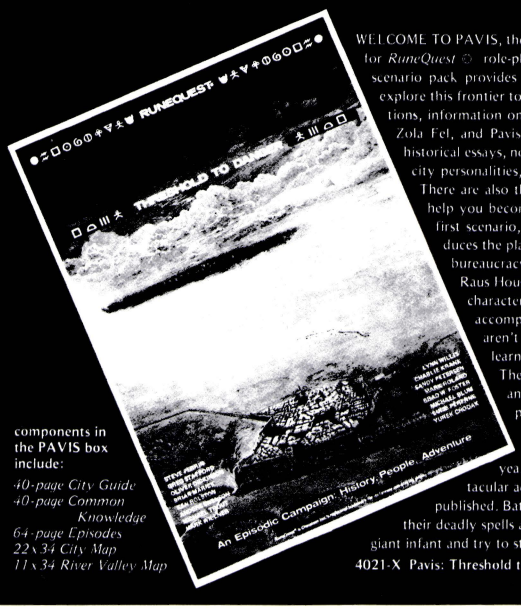

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Random Notes

The purpose of this column is to inform you of various fragments of **Traveller** background and other information which we have found it necessary to generate but have never published.

So this issue's topic, eh, is names. What name do you give your character if you want to match the quote official unquote **Traveller** background? I'll start with humans; if this column gets a high enough rating I'll cover aliens next time.

SOLOMANI

People of Terran descent are easy (that's almost everyone in the Spinward Marches and about 70% of those in the Solomani Rim). Just choose a first name from any modern Terran language and a last name from any Terran language (most likely a different one — the population was mixed well during the Interstellar wars and subsequent migrations). Don't confine yourself to European languages; Chinese, Japanese, and various Southeast Asian tongues should be prominent, as should languages of the Indian subcontinent, with African languages somewhat less common. Some Vilani first names are also fairly common (except, of course, in the Solomani Confederation) and it's very common for those with Vilani surnames to have Terran first names.

VILANI

Vilani have a personal name and a family name, just like we do, and the personal name comes first. The commonest male personal names are *Eneri, Enli, Ganidiirsi* (short form: *Gani*), *Shannash, Mazun,* and *Khugi.* The commonest female names are *Gamaagin* (short form: *Gam*), *Nashu, Sharikkamur* (short form: *Sharik*), *Iikush, and Munush.*

There are countless family names, and without going into Vilani grammar and vocabulary, I will just present a system for generating random Vilani-sounding words, taken from the computer program we use.

Vilani has an extremely simple phonetic structure, which would make it easy to pronounce if not for the fact that it's a tonal language: each syllable can be spoken in any of six tones, usually numbered in alphabetic transcription; $E_4ne_2ri_5$, the man's name, is a very different word from $e_1ne_1ri_4$, which means "bread pudding." Tones are too much trouble; let's ignore them. Just remember that real Vilani will probably laugh when we say anything.

Our computer program constructs words syllable by syllable. There are four types of syllables: those which consist of just a vowel, those which begin with a consonant, those which end with a consonant, and those which both begin and end with a consonant. We can represent these as V, CV, VC, and CVC. Their proportion in Vilani is about 1:4:3:2.

Within each syllable, there are up to three elements: an initial consonant, a vowel, and a final consonant. The table below shows the relative frequencies of the various sounds. The relative frequency of *k* as an initial consonant is 17:100, that of *d* as a final consonant is 2:34.

Most sounds are pronounced more or less as in English. *Kh* is as *ch* in German *ach.* Doubled vowels are pronounced just like single vowels, but for twice as much time. Doubled consonants are the same.

To construct a syllable, for example of type CVC, take one initial consonant, one vowel, and one final consonant from the list; we could take *k, u,* and *sh* to

come up with *kush.* A word is constructed by stringing syllables together. If you have a computer or 10, 100, 26, and 34-sided dice, you can roll for each sound; otherwise, just try to get the frequencies about right.

There are a few additional rules. A syllable beginning with a vowel should very rarely follow a syllable ending with a vowel (less than 1% of the time). If a syllable ends with a consonant and the next syllable begins with a similar consonant, the second consonant will often change into the first; for example, *ldtun* would usually become *lddun.* Doubled *s, z,* and *sh* are not possible; if the situation arises in the course of combining two words, one of them goes away.

Initial Consonants (100)

k	17	n	5
g	17	s	5
m	10	p	2
d	10	b	2
l	10	z	2
sh	10	r	2
kh	8		

Vowels (26)

a	8	aa	1
e	2	ii	2
i	7	uu	1
u	5		

Final Consonants (34)

r	12	s	2
n	4	d	2
m	6	p	1
sh	4	k	1
g	2		

ZHODANI

Zhodani names vary with social class. Intendants and nobles have a single name which includes their rank as a suffix. Intendants' names end in *-iepr.* Nobles have various suffixes; those known are (in ascending order) *-atl, -stebr, -tlas, -tlasche',* and *-iashav.* If a noble or intendant achieves higher rank, only the suffix changes. Thus *Plitsiepr* might become *Plitsatl* or even *Plitstebr.* Names are chosen by the individual in his fifth olympiad, for their significance or purely for sonority, and do not differ between the sexes.

Proles have a personal name and a family name (personal name first), both received at birth. The names have no particular significance, although they once did. Prole surnames commonly end in *-qaf* (''from'', for example *Dliant Jdiprzhdilqaf,* literally ''Dliant from Jdiprzhdil'', a large estate on Zhodane) or *-nad* (''-er'', as in *Tliaqrnad,* or Miller, from *Tliaqre',* ''to grind grain'').

Zhodani names can be constructed just like Vilani names above. The ratio of V:CV:VC:CVC syllables is about 1:1:2:6. Zhodani abounds in consonant clusters which make it tough to pronounce; oh well, at least there aren't any tones. Tables of sounds appear below.

Most sounds are pronounced more or less as in English (but good luck). *Q* is as in Arabic; *ia* and *ie* approximately as *ya* and *ye; zh* is as *s* in measure; *r* (as a vowel) is like the *r* in Polish *Przemysl;* ' is a glottal stop,

Syllables beginning with a consonant are only half as common as usual after any syllable ending in a consonant. There are a few combinations even the Zhodani consider unpronounceable, like *nchzhd,* and these do not occur; you should probably cut out consonant clusters with more than 4 letter most of the time.

That's all for now. Next, alien names?

— *John Harshman*

Vowels (31)

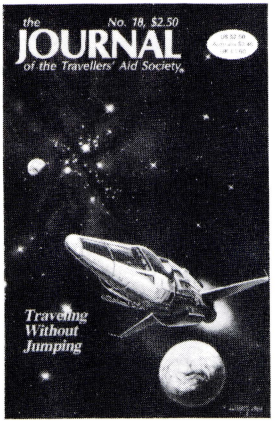
a	7	ie	4
e	8	o	2
i	5	r	1
ia	4		

Initial Consonants (128)

b	3	pr	2
bl	2	q	1
br	3	ql	1
ch	7	qr	1
cht	4	r	3
d	6	s	4
dl	4	sh	4
dr	3	sht	4
f	3	t	3
fl	2	st	4
fr	2	tl	6
j	4	ts	2
jd	3	v	3
k	3	vl	1
kl	1	vr	1
kr	1	y	2
l	2	z	3
m	1	zd	6
n	5	sh	4
p	4	zhd	6
pl	4		

Final Consonants (127)

b	1	nt	2
bl	4	nts	2
br	4	nz	3
ch	3	nzh	4
d	2	p	1
dl	4	pl	4
dr	4	pr	4
f	3	q	1
fl	3	ql	1
fr	3	qr	1
j	2	r	3
k	1	sh	4
kl	2	t	2
kr	1	ts	4
l	7	tl	5
m	1	v	3
n	1	vl	2
nch	4	vr	3
nj	3	z	5
ns	3	zh	4
nsh	4	'	4



Next Issue:

Travelling without Jumping. The ever-present J. Andrew Keith explores the rich possibilities to be found in adventuring in a single star system.

The triumphant return of *Casual Encounter,* and *Amber Zone*.

PLUS: *Contact,* the *Bestiary, Ship's Locker,* our regular features, and more!

In case you haven't heard, beginning with issue #7, the Workshop Newsletter will be available by subscription. There is no charge, just send us a letter telling us you want to receive it. Your subscription will last until January of the next year, when it automatically ends unless you send us another letter (preferably sometime in January) to renew. The old method was just too much trouble for gamers; now all you have to do is let us know once a year that you're still interested.

Beginning July 1, GDW began offering mail order service to individuals again. If you can't find a game in local stores, you can order it direct from us. Write for a catalog of games available. Our customer service department asks me to remind you to please write legibly. We can't send you what you order if we can't read it.

The following items for **Traveller** will be available by the end of July:

Supplement 13, *Veterans,* A **Traveller** supplement of pre-generated *Mercenary* characters.

Boxed Module 1, *Tarsus,* a closer look at a world in District 268 of the Spinward Marches.

The Traveller Adventure will finally make its appearance in August, and will be priced at $12.00. Regular readers will note that the price is somewhat reduced from our original estimate. This is because the book will be paperback instead of hardback, and thus less expensive to produce.

Other releases for the Summer and Fall include *Campaign Trail,* a presidential election game; *Near East,* a module for Europa; *Normandy Campaign,* Operation: Overlord; *Tactical Action Officer,* modern naval miniatures rules; and *Fire in the East,* the long-awaited DNO revision.

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